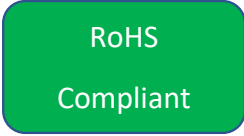
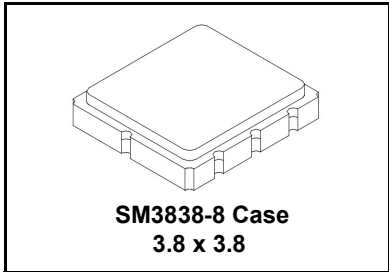


- **Ideal Front-End Filter for European Wireless Receivers**
- **Low-Loss, Coupled-Resonator Quartz Design**
- **Simple External Impedance Matching**
- **Complies with Directive 2002/95/EC (RoHS)**
- **Tape and Reel Standard per ANSI/EIA-481**
- **Moisture Sensitivity Level 1**
- **AEC-Q200 Qualified**



RF1404D

433.92 MHz SAW Filter



The RF1404D is a low-loss, compact, and economical surface-acoustic-wave (SAW) filter designed to provide front-end selectivity in 433.92 MHz receivers. Receiver designs using this filter include superhet with 10.7 MHz or 500 kHz IF, direct conversion and superregen. Typical applications of these receivers are wireless remote-control and security devices operating in Europe under ETSI I-ETS 300 220.

This coupled-resonator filter (CRF) uses selective null placement to provide suppression, typically greater than 40 dB, of the LO and image spurious responses of superhet receivers with 10.7 MHz IF. RFMi's advanced SAW design and fabrication technology is utilized to achieve high performance and very low loss with simple external impedance matching.

Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units
Center Frequency at 25°C Absolute Frequency	f_c			433.92		MHz
Insertion Loss	IL_{MIN}			1.6	2.5	dB
Passband Ripple (Relative to IL_{MIN}) $F_c \pm 200$ kHz				1.2	1.8	dB
3 dB Bandwidth	BW_3		500	600	800	kHz
Rejection Attenuation: (relative to IL_{min})	10 - 414 MHz		50	55		dB
	414 - 424 MHz		45	50		
	424 - 431 MHz		30	34		
	431 - 432 MHz		18	22		
	432 - 433 MHz		12	17		
	434.92 - 442 MHz		11	14		
	442 - 550 MHz		35	38		
	550 - 1000 MHz		50	55		
Temperature Freq. Temp. Coefficient	FTC			0.032		ppm/°C ²
Frequency Aging Absolute Value during the First Year	$ fA $			≤10		ppm/yr
Impedance @ f_c	Input $Z_{IN} = R_{IN} C_{IN}$	Z_{IN}	2853Ω // 1.66pf			
	Output $Z_{OUT} = R_{OUT} C_{OUT}$	Z_{OUT}	2411Ω // 1.73pf			
Lid Symbolization (Y=year WW=week S=shift)	539, YWWS					
Standard Reel Quantity	Reel Size 7 Inch			500 Pieces/Reel		
	Reel Size 13 Inch			3000 Pieces/Reel		

CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.
NOTES:

1. The design, manufacturing process, and specifications of this device are subject to change.
2. US or International patents may apply.
3. RoHS compliant from the first date of manufacture.

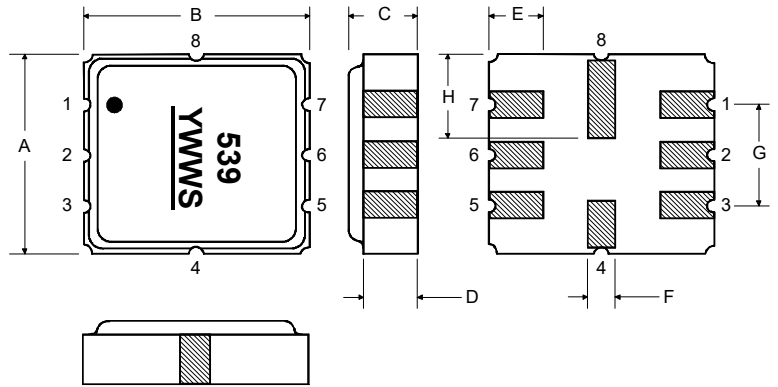
Characteristic	Value	Units
Input Power Level	10	dBm
DC Voltage	12	VDC
Storage Temperature	-40 to +125	°C
Operable Temperature Range	-40 to +125	°C
Soldering Temperature (10 seconds / 5 cycles max.)	260	°C

Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units
Center Frequency at 25°C Absolute Frequency	f_c			433.92		MHz
Insertion Loss	IL_{MIN}			2.3	3.0	dB
Passband Ripple (Relative to IL_{MIN}) $F_c \pm 200kHz$				1.2	2.0	dB
3 dB Bandwidth	BW_3		500	600	800	kHz
Rejection Attenuation: (relative to IL_{min})						dB
10 - 414 MHz			50	53		
414 - 424 MHz			45	50		
424 - 431 MHz			30	34		
431 - 432 MHz			18	22		
432 - 433 MHz			12	14		
434.92 - 442 MHz			11	14		
442 - 550 MHz			35	37		
550 - 1000 MHz			50	55		
Temperature Freq. Temp. Coefficient	FTC			0.032		ppm/°C ²
Frequency Aging Absolute Value during the First Year	$ fA $			≤10		ppm/yr
Impedance @ f_c Input $Z_{IN} = R_{IN} C_{IN}$	Z_{IN}		2853Ω // 1.66pf			
Output $Z_{OUT} = R_{OUT} C_{OUT}$	Z_{OUT}		2411Ω // 1.73pf			
Lid Symbolization (Y=year WW=week S=shift)	539, YWWS					
Standard Reel Quantity	Reel Size 7 Inch		500 Pieces/Reel			
	Reel Size 13 Inch		3000 Pieces/Reel			

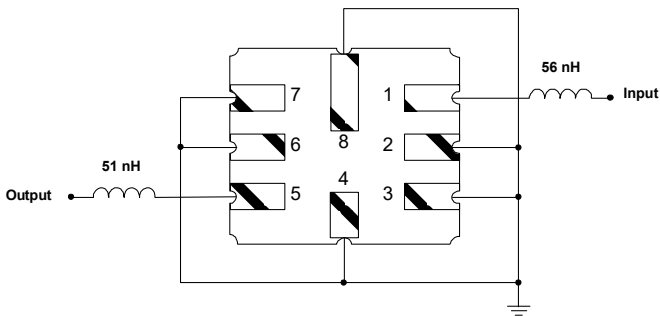
PRIMARY

Electrical Connections

Pin	Connection
1	Input
2	Input Ground
3	Ground
4	Case Ground
5	Output
6	Output Ground
7	Ground
8	Case Ground



Matching Circuit to 50Ω



Case Dimensions

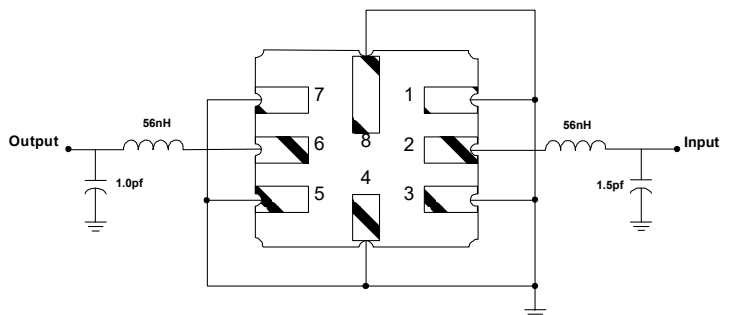
Dimension	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	3.6	3.8	4.0	0.14	0.15	0.16
B	3.6	3.8	4.0	0.14	0.15	0.16
C	1.00	1.20	1.40	0.04	0.05	0.055
D	0.95	1.10	1.25	0.033	0.043	0.05
E	0.90	1.0	1.10	0.035	0.04	0.043
F	0.50	0.6	0.70	0.020	0.024	0.028
G	2.39	2.54	2.69	0.090	0.100	0.110
H	1.40	1.75	2.05	0.055	0.069	0.080

OPTIONAL

Electrical Connections

Pin	Connection
1	Input Ground
2	Input
3	Ground
4	Case Ground
5	Output Ground
6	Output
7	Ground
8	Case Ground

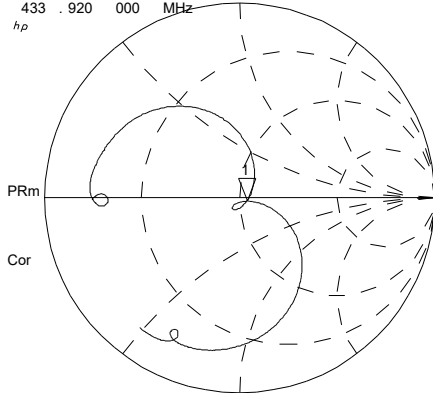
Matching Circuit to 50Ω



RF1404D (PRIMARY)
Inductor only match

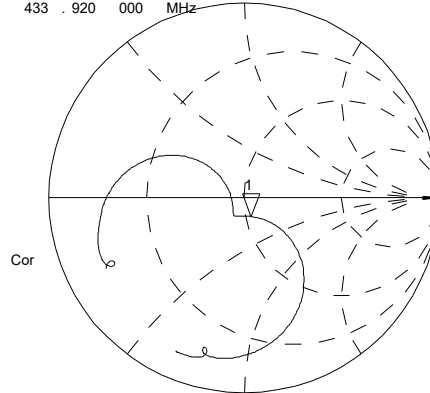
13 Sep 2004 16:34:53

CH1 S11 1 UFS
1: 54.117 Ω -1.7891 Ω 205.01 pF
433.920 000 MHz

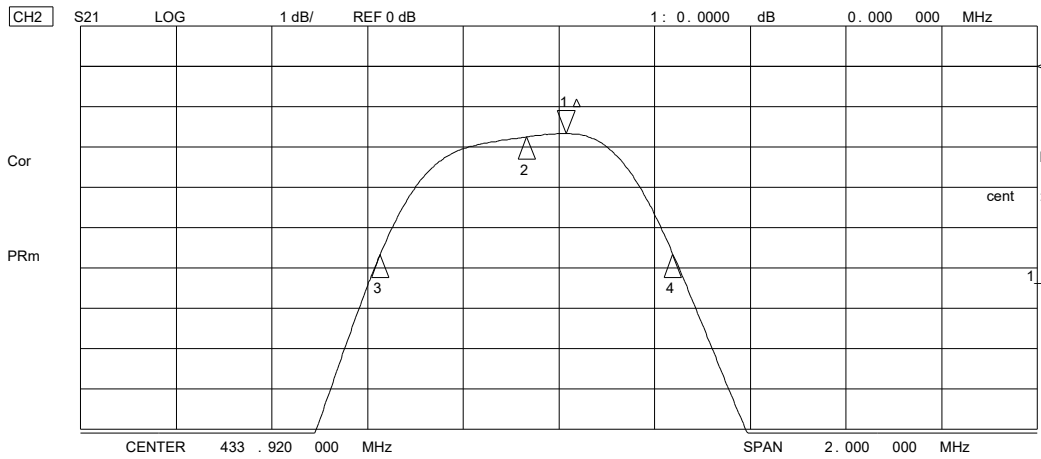


CENTR 433.920 MHz SPAN 2.000 MHz

CH3 S22 1 UFS
1: 52.682 Ω -10.119 Ω 36.247 pF
433.920 000 MHz

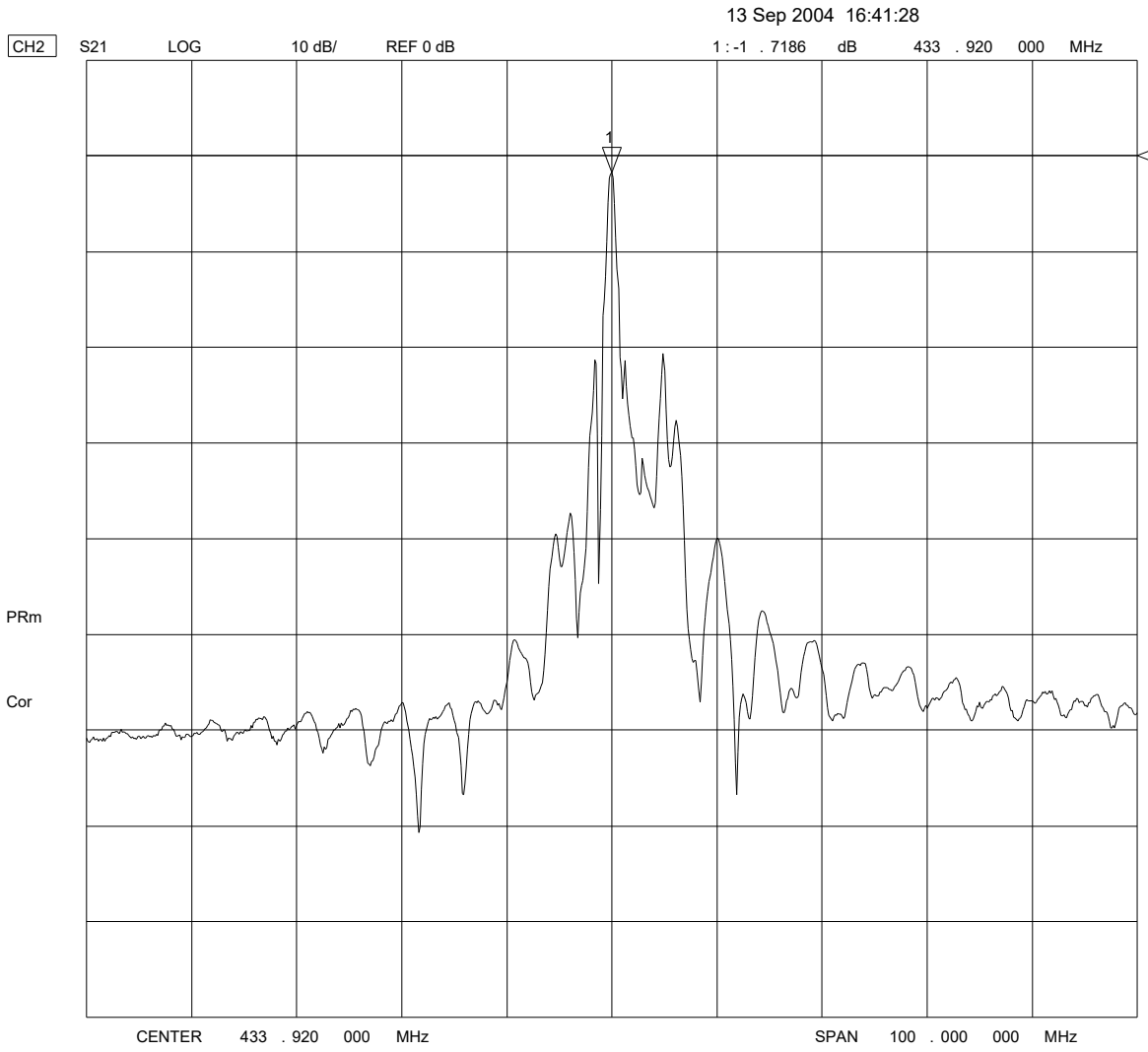


CENTR 433.920 MHz SPAN 2.000 MHz



CH2 Markers
Max Δ REF=1
BW: .612041 MHz
cent : 433.852345 MHz
Q: 708.86
1 loss : -1.6656 dB

RF1404D (PRIMARY)
Inductor only match



Recommended Reflow Profile

1. Preheating shall be fixed at 150~180°C for 60~90 seconds.
2. Ascending time to preheating temperature 150°C shall be 30 seconds min.
3. Heating shall be fixed at 220°C for 50~80 seconds and at 260°C +0/-5°C peak (10 seconds).
4. Time: 5 times maximum.

